REMARKS

Claims 1-10 and 13-17 are pending. Claims 1-10 and 13-17 are rejected.

Claims 1-4, and 13-17 are rejected under 35 USC 103 (a) as being unpatentable over Hansen et al. US 5,589,256 in view of Cook, US 5,562,740.

Claims 1-4, 6, 8 and 13-17 are rejected under 35 USC 103 (a) as being unpatentable over Hansen et al. 5789326 in view of Cook et al, US 5,562,740.

Claim 5 is rejected under U.S.C. 103 (a) as being unpatentable over Hansen et al. ('256) or Hansen et al. ('326) in view of Cook et al. and further in view of Smith et al. (US 2002/0090511).

Claims 6-8 are rejected under U.S.C. 103 (a) as being unpatentable over Hansen et al. ('256) in view of Cook et al. and further in view of Hansen et al. ('326).

Claims 1-8 and 12-13 are provisionally rejected under the judicially created doctrine of obvious-type double patenting as being unpatentable over claims 1, 5-8, 10-12 and 16-17 of copending Application No. 10/748930 in view of Cook et al.

Amendments to the Claims

Claim 1 has been amended. Support for this is found in Table 4, page 15.

Claim 18 has been added as a new independent claim; Claims 19 -30 have been added as news claims dependent on Claim 18.

Claims 14, 15 and 16 have been canceled.

The Rejection of Claims 1-4, and 13 -17 under 35 USC 103 (a)

Claims 1-4 and 13 -17 are rejected under 35 U.S.C. 103 (a) as unpatentable over Hansen et al. (5,589,256) in view of Cook.

Claim 1 has been amended. Claims 14, 15 and 16 have been canceled.

The rejection of the Claims is respectfully traversed.

The rejection of the claims based on the weight of the binder, the temperature range for curing and the absorbent products incorporating the bleached crosslinked fibers is moot in view of the amendment to Claim 1 and the cancelation of Claims 14 – 16.

Applicants submit the obviousness rejection based on the cited art does not apply.

Claim 1 has been amended to recite the crosslinked cellulose fibers comprise bleached polycarboxylic acid crosslinked cellulosic fibers and a polyol wherein the Whiteness Index is at least one unit greater than unbleached crosslinked cellulosic fiber comprising polycarboxylic acid crosslinked cellulosic fibers and a polyol.

For a *prima facie* rejection, there must be a suggestion, teaching or motivation, either in the reference or in the knowledge generally available to modify a reference, there must be a reasonable expectation of success, and all the claim limitations must be taught or suggested in the prior art.

The Hansen et al. ('256) invention discloses polymeric and non-polymeric binders for fibers and the use of such binders in binding particles to fibers. In particular embodiments the invention concerns binding superabsorbent particles to cellulosic fibers which may then be used, for example, to make absorbent fibers that are densified and incorporated into cellulosic products, column 1, lines 6-14.

Binders form coordinate covalent bonds or hydrogen bonds. On the other hand polycarboxylic acid crosslinking agents can react with, for example, cellulose to form a covalent bond with cellulose.

The Hansen et al. '256 reference discloses non polymeric particle binders which includes polyols and polycarboxylic acids, column 16, lines 59 – 67.

The '256 reference discloses that the binders may be used with fibers that have substantial intrafiber covalent crosslinks (such as HBA available from Weyerhaeuser) or with fibers that are substantially free of intrafiber covalent crosslinking, column 22, line 7- 10. The binders may be added to the fibers before, subsequent, or simultaneously with the addition of particles, column 22, line 37 – 39. The '256 reference discloses that initial application of the binder on high bulk fibers preferably occurs after the curing step, particularly if the binder can act as a crosslinking agent. The reference states that polycarboxylic acids such as citric acid, polyols such as propylene glycol and polyamines such as ethylene diamine can function as crosslinking agents, and are consumed during the curing step in the formation of covalent crosslinks. Hence where the crosslinking agent is also a binder, steps should be taken to prevent the binder from being consumed as a crosslinker in the curing step, column 42, lines 31 – 46. Hansen states that when curing the crosslinking

material in the presence of a binder that is also a crosslinking material, the fibers should contain at least 20 percent water by weight of the fibers when curing begins, column 42, line 54- 57.

The reference does not teach bleached polycarboxylic acid crosslinked cellulose fibers and a polyol with a Whiteness Index at least one unit greater than unbleached crosslinked cellulosic fibers comprising polycarboxylic acid crosslinked cellulosic fibers and a polyol. Nor is there a motivation or suggestion to bleach the resulting fibers. There is no need to improve the whiteness of the fibers since when cellulosic fibers are crosslinked with, for example, citric acid, the Whiteness Index is only 68.39 but when a polyol, sorbitol, is present in the crosslinking reaction, the Whiteness Index is elevated to 77.25, page 14, first two entries, Table 3. Thus a high Whiteness Index is already present and there is no motivation to achieve higher levels. Bleaching however, further increase the Whiteness Index by at least one unit, Table 4. Furthermore even if there was a recognition of the improved Whiteness Index, there is no motivation, teaching or suggestion to look beyond the '256 reference for further improvement in whiteness since the fibers are significantly improved in Whiteness Index already. The reference also does not teach bleached polycarboxylic acid crosslinked cellulose fibers and a polyol with a Whiteness Index at least one unit greater than unbleached crosslinked cellulosic fibers comprising polycarboxylic acid crosslinked cellulosic fibers and polyol, the wet bulk of 15.5 cc/g and the brightness greater than 80.

Cook et al. teach bleaching of C_2- C_9 polycarboxylic acid crosslinked fibers to improve brightness and reduce odor. Cook et al. state that the preferred C_2- C_9 crosslinking agent, citric acid, can cause discoloring of the white cellulose fibers when treated at elevated temperatures. In addition, unpleasant odors can be associated with the use of alpha- hydroxy polycarboxylic acids such as citric acid, column 3, lines 33 – 37.

The reference teaches that bleaching with an alkaline solution of hydrogen peroxide improves brightness from 70 – 75 to 80 – 85 and reduces odor, column 3, line 49 -52. Cook et al. do not teach the use of a polyol, rather, Cook teaches the use of an oxidizing agent to oxidize the color forming agents (yellowing) and those that cause odor. The reference also does not teach the Whiteness Index of at least one unit greater than

unbleached crosslinked cellulosic fibers comprising polycarboxylic acid crosslinked cellulosic fibers and a polyol, the wet bulk of 15.5 cc/g and the brightness greater than 80.

Applicants submit there is no motivation, teaching or suggestion to combine the references. The '256 reference is directed to binding of particles to fibers by hydrogen or coordinate or covalent bonds. When crosslinking of fibers occurs in the and binders are present the whiteness properties of the fibers are such that one skilled in the art would not look to improving them further even though Hansen et al. do not recognize this property. The '256 reference does not teach bleached polycarboxylic acid crosslinked cellulosic fibers and a polyol in which the Whiteness Index is at least one unit greater than unbleached crosslinked cellulosic fiber comprising polycarboxylic acid crosslinked cellulosic fibers and a polyol.

Cook teaches bleaching of C_2- C_9 polycarboxylic acid crosslinked fibers to improve brightness and reduce odor. Cook only teaches that bleaching of the crosslinked fibers with an oxidizing bleaching agent which improves brightness to 80- 86 from 70 – 75, column 3, line 49-52. In the instant invention a high Whiteness Index is achieved with a crosslinking agent and a polyol and then further increasing the Whiteness Index by bleaching with a bleaching agent so that the bleached crosslinked fibers are at least one unit greater than crosslinked fibers prepared in a similar manner but not bleached. The instant invention does not disclose the issues of yellowing and odor associated with crosslinking cellulosic fibers with citric acid. There is no motivation to combine the references since the instant application achieves a high Whiteness Index even before bleaching. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 1-4, 6 -10 and 13 -17 Under 35 U.S. C. 103(a)

Claims 1- 4, 6-10 and 13 -17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al. US 5,789,326 in view of Cook et al., U.S. 5,562,740.

Claims 14 – 16 have been canceled.

The rejection of the claims based on the weight of the binder, the temperature range for curing and the absorbent products incorporating the bleached crosslinked fibers is moot in view of the amendment to Claim 1 and the cancelation of Claims 14

– 16. Applicants submit the obviousness rejection based on the cited art does not apply.

Like the '256 disclosure, the '326 reference discloses particle binders. The binders can be applied to fibers that have substantial intrafiber covalent crosslinks (such as HBA available from Weyerhaeuser) or with fibers that are substantially free of intrafiber covalent crosslinking, column 28, line 37- 41. The reference states that in certain situations the binder can form intrafiber crosslinks and that polycarboxylic acids, such as citric acid, polyols such as dipropylene glycol and polyamines(such as ethylene diamine can function as crosslinking agents and are consumed during the curing step in the formation of covalent crosslinks, column 46, line 7 – line 12. There is no need to improve the whiteness of the fibers of Hansen et al. since when cellulosic fibers are crosslinked with, for example, citric acid, the Whiteness Index is only 68.39 but when a polyol, sorbitol, is present in the crosslinking reaction, the Whiteness Index is elevated to 77.25, page 14, first two entries, Table 3. Thus a high Whiteness Index is already present and there is no motivation to achieve higher levels. Hansen et al. does not disclose crosslinked cellulosic fibers comprising bleached polycarboxylic acid crosslinked cellulosic fibers and a polyol in which the Whiteness Index is at least one unit greater than unbleached crosslinked cellulosic fiber comprising polycarboxylic acid crosslinked cellulosic fibers and polyol. The bulk and brightness are also not disclosed.

Cook et al. teach bleaching of C_2- C_9 polycarboxylic acid crosslinked fibers to improve brightness and reduce odor. Cook et al. state that the preferred C_2- C_9 crosslinking agent, citric acid, can cause discoloring of the white cellulose fibers when treated at elevated temperatures. In addition, unpleasant odors can be associated with the use of alpha- hydroxy polycarboxylic acids such as citric acid, column 3, lines 33 – 37. The reference teaches that bleaching with an alkaline solution of hydrogen peroxide improves brightness from 70 – 75 to 80 – 85 and reduces odor, column 3, line 49 -52. Cook et al. do not teach the use of a polyol, to improve Whiteness Index, rather, Cook teaches the use of an oxidizing agent to oxidize the color forming agents (yellowing) and those that cause odor.

In the instant invention the Whiteness Index is achieved with a crosslinking agent and a polyol and then further increasing the Whiteness Index by bleaching with a bleaching agent so that the bleached crosslinked fibers are at least one unit greater than crosslinked fibers prepared in a similar manner but not bleached. The instant invention does not disclose the issues of yellowing and odor associated with crosslinked fibers and a polyol. There is no motivation to combine the references since the instant application achieves a high Whiteness Index even before bleaching. Withdrawal of the rejection is respectfully requested.

The Rejection of Claim 5 Under U.S.C. 103(a)

Claim 5 is rejected under U.S.C. 103 (a) as being unpatentable over Hansen et al. ('256) or Hansen et al. ('326) in view of Cook et al. and further in view of Smith et al. (US 2002/0090511).

Claim 1 is an independent claim, Claim 5 is dependent on Claim 1. Applicants submit that Claim 1, as amended, is nonobvious. If an independent claim is nonobvious under 103 then any claim dependent therefrom is nonobvious. *In re Fine,* 837 F.2d 1071, 5USPQ2d 1596 (Fed. Cir. 1988).

The '256 and '326 and Cook et al. references have been addressed above.

The Smith et al. invention relates to the use of refined cellulose fiber prior to crosslinking to achieve crosslinked fibers with low median desorption pressures and improved fluid drainage in acquisition and / or distribution layers compared to similar unrefined fibers, page 3 [0039]. The fibers may be crosslinked in the presence of a reducing agent to prevent yellowing of the fibers during the crosslinking reaction or they may be bleached during or after the crosslinking reaction to improve their appearance, [0068] and [0069]. Thus Smith et al. recognize the adverse effect of crosslinking and either prevents the yellowing by the addition of a reducing agent or treats the crosslinked fibers during or after curing to improve their appearance. Smith et al. do not disclose the use of polyols in the crosslinking reaction with cellulose with any of the polycarboxylic acids, including malic, to overcome the discoloration of the fibers by yellowing. There is no motivation to combine the references.

The '256 and '326 references of Hansen, the Cook et al. reference and the Smith et al. reference all teach the adverse effect on color. All the references cite citric acid as a crosslinking agent but only Smith et al. cite malic acid, which like citric, is a hydroxyl polycarboxylic acid. Applicants submit there is no motivation or suggestion to combine the references since the instant application achieves a high Whiteness Index even before bleaching and malic acid like citric acid when crosslinked in the presence of sorbitol results in fibers with a high Whiteness Index, see page 13, entry one compared to entries 2-4. Applicants respectfully request the objection to be withdrawn.

The Rejection of Claim 6-8 Under U.S.C. 103(a)

Claims 6-8 are rejected under U.S.C. 103 (a) as unpatentable over Hansen et al. the '256 reference in view of Cook et al. and further in view of Hansen et al. the '326 reference.

Claims 6-8 are dependent on Claim 1.

The '256 reference is disclosed above and does not disclose the specific acylic polyols and heterosides as in the instant claims. Cook et al. do not disclose any polyols at all.

The disclosure of Hansen et al., ('256) and ('326) and Cook et al. have been addressed above.

Sorbitol is claimed as a particle binder, Claims 3 and 4. Sorbitol is a polyol. There is no disclosure of crosslinked cellulosic fibers comprising bleached crosslinked cellulosic fibers and a polyol wherein the Whiteness Index is at least one unit greater than an unbleached crosslinked cellulosic fiber comprising polycarboxylic acid crosslinked cellulosic fibers and polyol. The disclosure of Hansen et al. '256 and Cook et al. do not disclose the specific acyclic polyols and heterosides of the instant invention.

There is no motivation or teaching to combine the '326 reference with the '256 and Cook et al. references to arrive at the instant invention. Even if they were combined, the combined references would not disclose all the elements of the instant invention including bleached polyacrylic acid crosslinked cellulosic fibers and a polyol with a Whiteness Index at least one unit greater than unbleached crosslinked cellulose fibers

comprising polycarboxylic acid crosslinked cellulosic fibers and a polyol. Withdrawal of the rejection is respectfully requested.

New Claims 18 -30

Applicants submit that neither of the Hansen references or the Cook reference teach air dried cellulosic pulp fibers crosslinked with a polycarboxylic acid in the presence of a polyol and then bleached. Furthermore, the references do not teach the Whiteness Index increase over the unbleached air dried cellulosic fibers crosslinked with a polycarbxylic acid in the presence of a polyol. Support for the new claims is found on page 11, line 18 –page 12, line 10.

The Provisional Obvious Type Double Patenting Rejection

Claims 1-8 and 12-13 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5-8, 10-12 and 16-17 of copending application 10/748930. Applicants note the provisional double patenting rejection and will file a terminal disclaimer on the Examiner's indication of allowable subject matter.

CONCLUSION

In view of the, the amended claims and the foregoing remarks, applicants submit claims 1- 17 are in condition of allowance. Applicants request consideration and allowance of new claims 18 -30. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to telephone the applicant's agent.

Respectfully submitted

David G. Unrau
Registration No. 53,710
Direct Dial 253-924-2439